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ABSTRACT

A systems approach can be viewed as an attempt to answer the question, "What objectives are we to accomplish, by which procedures, and with what available resources?" The necessity for a systems approach is evident in many areas, and particularly explicit examples can be found in military history. A management system has been defined in terms of the methods by which an institution plans, operates, and controls its activities to meet its objectives by utilizing the resources of people, materials, equipment, information, and money. The evaluation of a system's adequacy involves how closely the output of the system fulfills the purposes for which it exists. Further, the quality of an educational institution can only be assessed after its goals are precisely stated and evaluated. The systems approach for school administrators must, then, be preceded by an overview regarding systems applications, since many administrators view the systems approach as merely a highly theoretical exercise. (PB)

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A SYSTEMS OVERVIEW

for the

SCHOOL ADMINISTRATOR

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Introduction

It seems that in recent years a phenomenon referred to as "the systems approach" has manifested itself in nearly every organized human enterprise. Volumes have been published which treat "the systems approach" to problem solving at all levels of the governmental and the industrial hierarchy. Only within the past few years has the systems concept been formalized within the realm of education. And, to be sure, very few works have emerged with an end in confronting the problems of the school administrator with a systematized approach toward planning, implementing, and evaluating the subsystems of the educational institution.

This article, in itself, is a system. Its primary goal is to present, as efficiently and as effectively as possible, a systems view of educational administration with a brief overview and history of the systems concept as it exists (under many guises) at most institutions.

It is hoped that the reader will sharpen his cast of mind with respect to nurturing a systems view of education and, as a by-product of this article, provide him with a keener and more analytic eye toward perceiving the quality of inter/intra-institutional functions as they are integrated into the "big picture" of society.

Equally as important, it should be emphasized at the outset that effective systems approaches, systems concepts, and systems models depend upon the qualitative interaction of people. Therefore, this article is intended to reinforce the administrator's notions of importance of the individual within an organization. For, when conditions are provided which contribute to the individual's perceiving the positive relationship between the institution's goals and his own personal goals, the organization will flourish.

An Overview of Systems

The systems approach can be initially viewed as an attempt to answer the question: "What objectives are we to accomplish, by which procedures, with what available resources?"

The simplistic nature of this question is deceptive. For, the complexities of each aspect of the systems approach geometrically increase in direct proportion to the number of elements to be considered as system inputs, the

in-depth analysis of each element, the limitations of time, personnel, and space variables, ad infinitum.

The need for a systems approach to problem solving is concisely stated by Robert Disatnick as follows:

> Unless an organization recognizes the need to coordinate the efforts of its key people toward the realization of common objectives, it subjects itself to either misdirection and dissipated energy or minimal effectiveness at best.[1]

The key elements of any system need to be identified and linked together into some unified whole in order to "set the stage" for conditions which will contribute to the individuals directly associating and relating the goals of the organization to his own personal goals.

Carl Rogers in his book Freedom to Learn reinforces this notion when he suggests that an institution's success depends upon the compatability of organizational goals and personal goals. It is the task of the administrator to arrange the conditions and methods of institutional operation so that its people can best achieve their own goals by also furthering the jointly defined goals of the organization.[2]

The interaction of elements within a unified whole is a fascinating phenomenon to examine. In direct contradiction to Euclidean logic, and concomitant with Gestalt psychology, this interaction of elements clearly adds more to the organized whole than the simple sum total of its constituent parts.

If we were to examine the operation of any piece of machinery, this concept would become obvious. Take, if you will, the example of the functioning automobile engine. When all of its component subsystems are interacting properly, something greater than the total aggregate of its components is being manifested. When, as a further example, the organs of an organism are functioning beyond a minimal level the presence of life or the quality of "alive-ness" can be added to the totality of the physical substance. Also apparent in the preceeding examples is the understanding that the level of performance of the engine or the quality of life of the organism is a direct function of the efficiency of each of the interacting components or subsystems. Within the realm of possibility, then, is the potentiality of an ever-efficient component of the system creating a counter-productive imbalance which could contribute to the detriment of the system's operation.

The training of an architect embodies and delineates the essence of the necessity for a systems approach to problem solving. Within the design of his buildings he must blend a desirable compromise of the functional and the aesthetic; the efficient and the effective; the stability of interacting subsystems and the inherent assets in individual subsystems autonomy. He must synthesize the engineering, electrical, heating, ventilating, plumbing, sanitation, etc., systems and each included sybsystem and provide for their performance in concert with one another toward the achievement of clearly defined objectives. These clearly defined objectives can only arise as the result of identified and acknowledged needs or present systems liabilities. It should be evident that the performance of subsystems can be measured only in terms of the extent to which the overall system's objectives are met.

Historically, the systems approach was in evidence more than 2000 years ago when Phillip of Macedonia established a very advanced organization of commissaries, transportation hospitals, military staff and weapons systems, etc.[3]

Another example which relates military success to administrative efficiency is found in the development of information systems and the formulation of staff theory by Paul Thiebault, a general on Napoleon's staff.[4] On one occasion Thiebault was embarrassed by his lack of information when Napoleon questioned him on the matter of the strength and location of detachments, armaments, the supply situation, the condition of the enemy, etc. As a result he gathered as much information as he could on the subject of military staff organization and communications, collated it, and subsequently published the first manual of basic staff theory.

To expand upon the examples used above, the work by Albert Speer entitled Inside the Third Reich[5] should be read by anyone wishing to comprehend the significance of systems training and the systems approach to problem solving. This well-documented example in recent history serves to reflect the scope and potential impact of systems analysis upon a large scale war effort.

Speer's classical training as an architect provided him with a cast of mind which, when applied to the maintainance of an armaments system through the effective management of a military-industrial-complex, was devastatingly effective. His ability to adjust and innovate systems to synchronize men, machinery, and materials kept the German war effort alive until long after the Allied forces clearly displayed superior strategical ability by continually mass-bombing the heart of German industry.

The book also provides a clear example of the result of systems misuse.

As early as 1941 German scientists had developed the first operational jet powered fighter plane, the Me. 262. Because of his great mistrust of this new weapon, Hitler refused to allow it to be produced in large quantities until early in 1944 when all else seemed to be failing. At this late point in the war, when German industry still had the capability of producing more than two hundred of these jet aircraft per month, Hitler ordered the weapons system re-designed and converted these potentially effective fighters into relatively ineffective, tiny bombers. Thus, this weapons system misuse clearly cost the Germans, at the very least, the opportunity to significantly prolong the war which would have bought time to refabricate the industrial production base.[6]

Systems More Precisely Defined

Thomas B. Glans, et al, in Management Systems defines a management system in terms of the methods by which an institution plans, operates, and controls its activities to meet its objectives by utilizing the resources of people, materials, equipment, information, and money.[7]

The authors compartmentalize the development of a system into three stages. First, an analytic study of the existing system must be undertaken

to identify problems and to establish goals and objectives in view of the system's needs. Once this has been accomplished the new system can be designed. Secondly, after the new system has been designed its programs must be tested in actuality or in simulation so that the conversion from the old to the new system can be accomplished with a minimum of impedence. The final stage consists of an evaluation of the system's performance and an analysis of its operation so that it can be modified for improvement.

A truly comprehensive systems definition in the generic sense of the term is found in Instructional Systems by Bela Banathy. Dr. Banathy leaves no room for misinterpretation as he states:

> Systems are assemblages of parts that are designed and built by man into organized wholes for the attainment of specific purposes. The purpose of a system is realized through processes in which interacting components engage in order to produce a predetermined output. Purpose determines the process required, and the process will imply the kinds of components that will make up the system. A system receives its purpose, its input, its resources, and its constraints from a suprasystem. In order to maintain itself, a system has to produce an output which satisfies the suprasystem.[8]

In other words, the purposes (objectives) of suprasystems are to be met by the required processes (interaction of component subsystems) of the content (available resources).

The evaluation of a system's adequacy, then, can only transpire in terms of how closely the output of the system fulfills the purposes for which it exists. Further, the quality of an educational institution can only be assessed after its goals are precisely stated and evaluated.

Conclusion

The systems approach for school administrators, then, must be preceeded by a certain overview and cast of mind regarding systems applications.

In many university graduate programs we are expected to absorb the principles of PPBS or PERT systems, for example, before we've actually developed a feeling of value for systems application and analysis. This approach, I fear, is likely to foster a mental barrier to the extent that many administrators view the systems approach as a highly theoretical exercise that had to be studied and endured during graduate studies and then put aside to gather dust on the bookshelf.

I hope the aforementioned paragraphs have helped to inculcate a new system view with an end toward serious application for the betterment of our nation's schools.

Notes

1.) Robert L. Desatnick, A Concise Guide to Management Development (American Management Association, Inc., 1970), pp. 23-24.

2.) Carl Rogers, Freedom to Learn (Columbus, Ohio, Merrill Publishing Co., 1969), pp. 205-213.

3.) J. D. Hittle, The Military Staff (Harrisburg, Pennsylvania, The Military Service Publishing Co., 1949), p. 91.

4.) Ibid. p. 20.

5.) Albert Speer, Inside the Third Reich (New York, The MacMillan Co., 1970.)

6.) Ibid. pp. 464-481

7.) Thomas B. Glans, et. al., Management Systems (New York, Holt, Rinehart, and Winston, 1968), pp. 3-4.

8.) Bela Benathy, Instructional Systems (Palo Alto, California, Fearon Publishing Co., 1968), p. 12.